02/04/14 Agenda:

- Warm Up Problem

- Review Quiz

- Review Homework
  - Worksheet 6 - Trig Ratios

- Sections 7.5-7.7
  - Trig Ratios - Find Missing Sides

- Homework
  - Worksheet 7 - Find Missing Sides

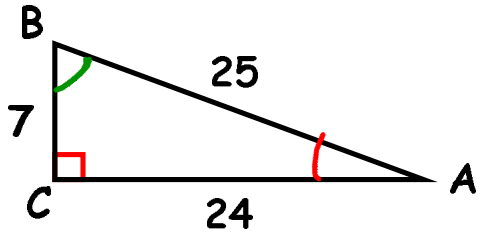
Warm Up - Homework Out!

Identify the correct ratio for each trig function:

$\sin\angle A = \frac{7}{25}$ $\quad \sin\angle B = \frac{24}{25}$

$\cos\angle A = \frac{24}{25}$ $\quad \cos\angle B = \frac{7}{25}$

$\tan\angle A = \frac{7}{24}$ $\quad \tan\angle B = \frac{24}{7}$



Solve the following proportions:

$\frac{4}{7} = \frac{x}{42}$

$7x = 4 \cdot 42$

$7x = 168$

$x = 24$

$\frac{2}{3} = \frac{x+2}{12}$

$2 \cdot 12 = 3(x+2)$

$24 = 3x + 6$

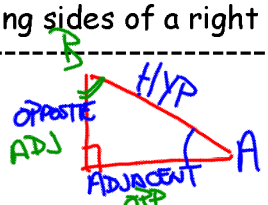
$18 = 3x$

$6 = x$

Sections 7.5-7.7 - Find Missing Side Using Trig Ratios

Target 7D February 4, 2014

Goal: Use sine, cosine, and tangent ratios to find the missing sides of a right triangle.



$\sin\angle A = \frac{OPP}{HYP}$

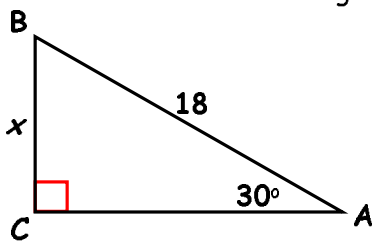
Review: **SOH** - **CAH** - **TOA** stands for? $\cos\angle A = \frac{ADJ}{HYP}$

$\tan\angle A = \frac{OPP}{ADJ}$

Why do we use trig ratios? Many times in real life, triangles are not our special triangles (45-45-90 & 30-60-90). We use trig functions to find the measures of missing sides and angles.

Example 1: Let's take a special right triangle and find the missing side using a trig function. Given that it is a special right triangle, we already know what the side lengths are.

Which angle are we given? $\angle A = 30^\circ$



Which sides are we given?
(opp / adj / hyp)

Which trig function should we use?
(sin / cos / tan)

What is our expected answer? 9

Let's set it up:

$\sin\angle A = \frac{OPP}{HYP}$

$18 \cdot (\sin 30^\circ) = \left(\frac{x}{18}\right) 18$

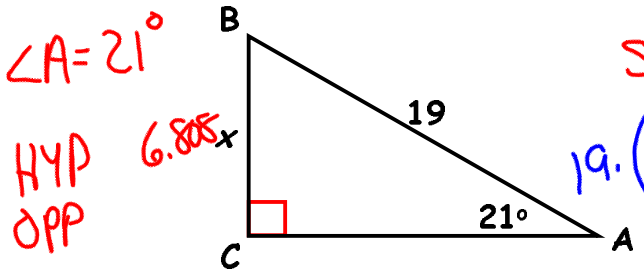
$18 \cdot \sin 30^\circ = x$

$9 = x$

Can we solve for x now?

Did we get our expected answer?

Example 2: Find the missing side length of the triangle. Round your answer to 3 decimal places.



$\angle A = 21^\circ$

HYP

OPP

6.808

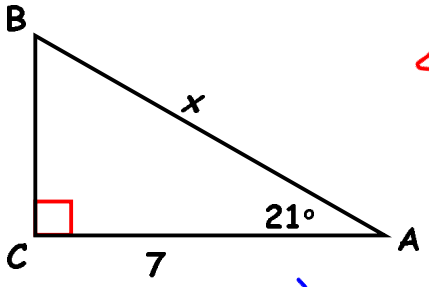
$\sin \angle A = \frac{OPP}{HYP}$

$19 \cdot (\sin 21^\circ) = \left(\frac{x}{19}\right) \cdot 19$

$19 \cdot \sin 21^\circ = x$

$6.808 = x$

Example 3: Find the missing side length of the triangle. Round your answer to 3 decimal places.



$\angle A = 21^\circ$

HYP

ADJ

$\cos \angle A = \frac{ADJ}{HYP}$

$x(\cos 21^\circ) = \left(\frac{7}{x}\right)x$

$\frac{x \cdot \cos 21^\circ}{\cos 21^\circ} = \frac{7}{\cos 21^\circ}$

$x = \frac{7}{\cos 21^\circ}$

$x = 7.498$

Summary Page:

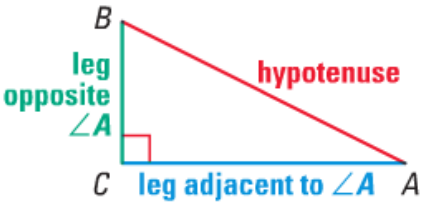
KEY CONCEPT *For Your Notebook*

Sine and Cosine Ratios

Let $\triangle ABC$ be a right triangle with acute $\angle A$. The sine of $\angle A$ and cosine of $\angle A$ (written sin A and cos A) are defined as follows:

$$\sin A = \frac{\text{length of leg opposite } \angle A}{\text{length of hypotenuse}} = \frac{BC}{AB}$$

$$\cos A = \frac{\text{length of leg adjacent to } \angle A}{\text{length of hypotenuse}} = \frac{AC}{AB}$$



KEY CONCEPT *For Your Notebook*

Tangent Ratio

Let $\triangle ABC$ be a right triangle with acute $\angle A$. The tangent of $\angle A$ (written as tan A) is defined as follows:

$$\tan A = \frac{\text{length of leg opposite } \angle A}{\text{length of leg adjacent to } \angle A} = \frac{BC}{AC}$$